



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,490	10/08/2003	Pieter Vorenkamp	1875.3610001	5497

26111 7590 09/13/2007  
STERNE, KESSLER, GOLDSTEIN & FOX P.L.L.C.  
1100 NEW YORK AVENUE, N.W.  
WASHINGTON, DC 20005

EXAMINER

DEPPE, BETSY LEE

ART UNIT	PAPER NUMBER
----------	--------------

2611

MAIL DATE	DELIVERY MODE
-----------	---------------

09/13/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/680,490	<b>Applicant(s)</b> VORENKAMP ET AL.	
	<b>Examiner</b> Betsy L. Deppe	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 18-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2007 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1 and 22 have been considered but are moot in view of the new ground(s) of rejection.

### ***Drawings***

2. The drawings were received on June 18, 2007. These drawings are acceptable.
3. The drawings are objected to because in Figure 7, the question marks after each axis label of "VOLTAGES" should be deleted. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the

Art Unit: 2611

changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. The disclosure is objected to because of the following informalities:
  - a. on page 5, line 6, "the a slicer or" (see paragraph [22] amendment) should be "a slicer or the"; and
  - b. paragraphs [32] and [33] do not refer to the new figures 6-1, 6-2 and 7-1 that were added to the drawings.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger (US Patent No. 6,212,229 B1 cited in the Office Action mailed February 16, 2007) in view of Polhemus (US Patent No. 5,337,025).
7. With regard to claims 1 and 2, Figure 3 of Salinger discloses the claimed invention including a transmission line (10), a transmitter de-emphasis circuit (38) and an equalizer wherein the transmitter de-emphasis circuit compensates for frequency

Art Unit: 2611

distortion caused by the transmission line. (See abstract; column 1, line 64-column 2, line 18; column 6, lines 47-52) Although Salinger refers to 38 as a "pre-emphasis filter" instead of "de-emphasis filter" as recited, the element as described in Salinger is functionally equivalent to the "de-emphasis filter" as recited and referring to 38 as a "pre-emphasis filter" or "de-emphasis filter" is a naming convention that does not affect the functionality/purpose of the element. Furthermore, based on Figure 6, the applicant appears to "de-emphasis" and "pre-emphasis" interchangeable. However, Salinger does not teach a de-emphasis circuit that includes first and second transconductance devices coupled in parallel and a summer device for summing the current outputs of the first and second transconductance devices.

Figure 8 of Polhemus discloses an adaptive equalization circuit that includes first and second transconductance devices coupled in parallel and a summer device for summing the current outputs of the first and second transconductance devices. (see column 7, lines 14-33) It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the equalization circuit of Polhemus as the pre-emphasis circuit of Salinger in order to accommodate variable length transmission lines without limiting the bandwidth of the signal. (See Polhemus, column 3, lines 42-67)

8. With regard to claims 3 and 4, Salinger in view of Polhemus disclose the claimed invention including a circuit with a gain that increases with frequency to offset signal loss of a transmission line. (See Salinger, Figure 2)

9. With regard to claim 10, Salinger in view of Polhemus discloses the claimed invention including a twisted pair transmission line. (See Salinger, "10" in Figure 3)

10. Claims 1-2, 8-10, 19, and 20 are rejected under 335 U.S.C. 103(a) as being unpatentable over Fitzgerald et al. (US Patent No. 5,579,336 cited in the Office Action mailed February 16, 2007) in view of Polhemus.

11. With regard to claims 1, 2, and 10, Fitzgerald et al. discloses the claimed invention including a transmission line (see 18a in Figure 1), a transmitter de-emphasis (e.g. 140 in one workstation) and an equalizer coupled to the output of the transmission line (e.g. 205 in another workstation). (See Figures 2 and 3; and column 4, line 49 - column 5, line 20) However, Fitzgerald et al. does not teach a de-emphasis circuit that includes first and second transconductance devices coupled in parallel and a summer device for summing the current outputs of the first and second transconductance devices.

Figure 8 of Polhemus discloses an adaptive equalization circuit that includes first and second transconductance devices coupled in parallel and a summer device for summing the current outputs of the first and second transconductance devices. (See column 7, lines 14-33) It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the equalization circuit of Polhemus as the equalizing circuit of Fitzgerald et al. in order to accommodate variable length transmission lines without limiting the bandwidth of the signal. (See Polhemus, column 3, lines 42-67)

12. With regard to claim 8, Fitzgerald et al. in view of Polhemus disclose the claimed invention including a passive equalizer. (See Fitzgerald et al., 105 in Figure 3)

13. With regard to claim 9, Fitzgerald et al. in view of Polhemus disclose the claimed invention including reducing the amplitude of low frequency components in the input signal. (See Fitzgerald et al., column 4, line 66 - column 5, line 1)

14. With regard to claims 19 and 20, Fitzgerald et al. in view of Polhemus disclose the claimed invention including an equalizer that is a RC filter with a high pass response. (See Fitzgerald et al., 105 in Figure 3)

15. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Salinger or Fitzgerald et al.) in view of Polhemus, as applied to claim 1 above, and further in view of Gilbert (US Patent No. 6,525,601 cited in the Office Action mailed February 16, 2007).

16. With regard to claim 5, (Salinger or Fitzgerald et al.) in view of Polhemus discloses the claimed invention except for an inductive peaking circuit at the output of the transmission line. Since Gilbert discloses that inductive peaking improves high frequency operation (see column 10, lines 24-25), it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the equalizer in as an inductive peaking circuit in the circuit disclosed by (Salinger or Fitzgerald et al.) in view of Polhemus in order to improve the operation of the receiver.

17. With regards to claims 6 and 7, (Salinger or Fitzgerald et al.) in view of Polhemus and Gilbert disclose the claimed invention except for details of the inductive peaking

circuit as recited in the respective claims. At the time of the invention, it would have been obvious matter of design choice to one of ordinary skill in the art to use an inductive peaking circuit as recited since the applicant has not disclosed that the recited inductive peaking circuit provides an advantage, is used for a particular purpose or solves a stated problem. The specific structure or circuitry of the inductive peaking circuit is a matter of design choice based on considerations such as available components and desired size.

18. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger in view of Polhemus as applied to claim 1 above, and further in view of Gauthier et al. (US Pub. No. 2004/0120419 cited in the Office Action mailed February 16, 2007). Salinger in view of Polhemus disclose the claimed invention except for the transmitter "de-emphasis" circuit reducing the amplitude of the low frequency components in the input signal.

Gauthier et al. teaches using a transmitter filter that reduces the amplitude of the low frequency components to compensate for frequency distortion. (See abstract and paragraphs [0025] - [0028]) It would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the pre-emphasis circuit of Salinger in view of Polhemus with the filter of Gauthier et al. in order increase the reliability of data correction while dissipating less power than conventional solutions to intersymbol interference problems. (See Gauthier et al., paragraphs [0011] and [0032])



19. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Salinger or Fitzgerald et al.) in view of Polhemus as applied to claim 1 above, and further in view of Winget (US Patent No. 4,275,358).

20. With regard to claim 11, the references as applied to claim 1 above disclose the claimed invention except for the equalizer including an inductor between the components of the differential transmission line. Winget discloses different equalization circuits that include inductors. (See Figures 1 and 2) It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement one of the equalization circuits disclosed by Winget in the circuit disclosed by (Salinger or Fitzgerald et al.) in view of Polhemus to perform the same function with a known circuit. It also would have been an obvious matter of design choice based on readily available components such as resistors and inductors.

21. With regard to claim 12, (Salinger or Fitzgerald et al.) in view of Polhemus and Winget disclose the claimed invention including a resistor in series with the inductor. (See Winget, Figures 1 and 2)

22. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over (Salinger or Fitzgerald et al.) in view of Polhemus, as applied to claim 1 above, and further in view of Doyle et al. (US Patent No. 5,694,439 cited in the Office Action mailed February 16, 2007). (Salinger or Fitzgerald et al.) in view of Polhemus disclose the claimed invention except for a constant impedance equalizer. Since Doyle discloses that the lack of constant impedance (i.e. impedance matching problems) results in filters

with poor return loss characteristics (see column 2, lines 1-8), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a constant impedance equalizer or a constant impedance input to the RC filter in (Salinger or Fitzgerald et al.) in view of Polhemus in order to reduce signal reflections and improve signal quality.

23. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fitzgerald et al. in view of Polhemus, as applied to 19 above, and further in view of Doyle et al. Fitzgerald et al. in view of Polhemus disclose the claimed invention except for a constant impedance input to the RC filter. Since Doyle discloses that the lack of constant impedance (i.e. impedance matching problems) results in filters with poor return loss characteristics (see column 2, lines 1-8), it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a constant impedance equalizer or a constant impedance input to the RC filter in Fitzgerald et al. in view of Polhemus in order to reduce signal reflections and improve signal quality.

24. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salinger in view of Winget.

25. With regard to claims 22 and 23, Figure 3 of Salinger discloses the claimed invention including a differential transmission line (10), a transmitter circuit with equalization (38) and an equalizer wherein the transmitter circuit with equalization (38) compensates for frequency distortion caused by the transmission line. (See abstract;

column 1, line 64-column 2, line 18; column 6, lines 47-52) However, Salinger does not disclose that the equalizer includes an inductor between the components of the differential transmission line.

Winget discloses different equalization circuits that include inductors. (See Figures 1 and 2) It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement one of the equalization circuits disclosed by Winget in a circuit as taught by Fitzgerald in order to perform a similar function with a known circuit and readily available components such as resistors and inductors.

26. With regard to claim 24, Salinger in view of Winget discloses the claimed invention including a transmitter circuit with equalization (38) that includes a de-emphasis circuit that increases with frequency across a band of interest. (See Salinger, Figure 2) Although Salinger refers to 38 as a "pre-emphasis filter" instead of "de-emphasis filter" as recited, the element as described in Salinger is functionally equivalent to the "de-emphasis filter" as recited and referring to 38 as a "pre-emphasis filter" or "de-emphasis filter" is merely a naming convention that does not affect the functionality/purpose of the element. Furthermore, based on Figure 6 of the present application, the applicant appears to "de-emphasis" and "pre-emphasis" interchangeable.

### ***Conclusion***

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betsy L. Deppe whose telephone number is (571) 272-3054. The examiner can normally be reached on Monday, Wednesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 2611

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Betsy L. Deppe  
Primary Examiner  
Art Unit 2611

